

Letter to the editor
On the small graphs with chromatic number 5
without 4-cliques

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Toft in [4] drew attention to the problem of the minimum number of vertices of the 5-chromatic graphs, not containing 4-cliques. Hanson et al. in [1] solve this problem by proving that the minimum number of vertices equals 11. But perhaps they were not aware that in paper of Nenov [3] given in the references under N 3 by them, the problem has already been solved.

The aim of this note is to draw attention to the fact that:

Firstly, the graph shown in Fig. 1, of [1] found by Youngs is in fact published in [2] (see p. 165) by Nenov [3].

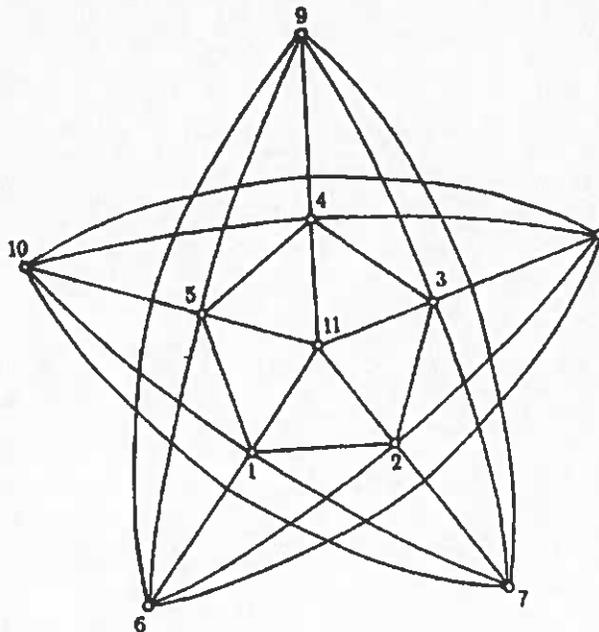


Fig. 1

Secondly, the paper [3] given by Hanson et al. under N 3, was published in 1984, a fact not mentioned in the text, nor in references.

References

- [1] D. Hanson, G. MacGillivray, D. Youngs, The size of a minimum five-chromatic K_4 -free graph, *Discrete Math.* 122 (1993) 353–355.
- [2] N.D. Nenov, On the Zykovs numbers and some its application in Ramsey theory (in Russian), *SERDICA Bulgaricae mathematicae publicationes* 9 (1983) 161–167.
- [3] N.D. Nenov, The chromatic number of any 10-vertex graph without 4-cliques is at most 4 (in Russian), *C.R. Acad. Bulgare Sci.* 37 (1984) 301–304.
- [4] B. Toft, Graph colouring problems, part 1, Institute for Mathematic og Datalogi, Odense Universitet, preprint No. 2, 1987.